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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/565,265	01/25/2006	Jurgen Denul	016782-0346	7815
22428 7590 11/10/2008 FOLEY AND LARDNER LLP SUITE 500 3000 K STREET NW WASHINGTON, DC 20007				
EXAMINER				
MILLER, DANIEL H				
ART UNIT		PAPER NUMBER		
1794				
MAIL DATE		DELIVERY MODE		
11/10/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/565,265

**Applicant(s)**

DENUL ET AL.

**Examiner**

DANIEL MILLER

**Art Unit**

1794

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 4-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 4-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. Claims 1 and 4-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Derflinger et al (US 7,067,191) in view of Yang (Materials Letters 57 (2003) 3305-3310).
2. Derflinger teaches a substrate covered by a metal layer (2b) and another layer containing nitrogen (2a) and then a second metal layer (3) covered by a carbide layer (4b) and then covered with a hard carbon layer (4a) (see figure 5). The top carbon containing layer can be optionally replaced with a diamond like coating (column 4 line 45-55). The deposition method includes the formation nano-crystalline Carbides in an inert atmosphere (Column 6 line 30-40; and column 7 line 27-33).
3. The layers can comprise Ti or Cr and the nitride containing layer can comprise CrN (see claims 7, 8, and 10).
4. Regarding claims 10-12, the layers have the same thickness as applicant's claimed thickness (see ref. claims 25-43).
5. Regarding claims 13-15, given the substantial similarities of the compositions and thickness of the layers they would be expected to have substantially similar properties, and are thus anticipated by the reference.
6. Derflinger is silent as to a DLN (Diamond Like Nanocomposite) coating.

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7. Yang teaches that DLN films are advantageous for protective coatings particularly those requiring high hardness and low friction in contact with counter materials, and good adhesion between the film and substrate (see Intro.). The DLN films have advantages over traditional diamond like carbon film in that they adhere to a variety of substrates better and have excellent thermal stability not found in diamond like coatings and represent a significant advance in both stability and the ability to tailor specific properties of the coating (See Intro.).
8. It would have been obvious to one of ordinary skill in the art at the time of the inventions to substitute the DLN coating of Yang for the more traditional DLC coating of Derflinger because the DLN films have advantages over traditional diamond like carbon film in that they adhere to a variety of substrates better and have excellent thermal stability not found in diamond like coatings and represent a significant advance in both stability and the ability to tailor specific properties of the coating (See Intro Yang.), all of which would improve the wear resistant properties of the coating of Derflinger.
9. Regarding claims 16-17, Yang teaches a (PECVD) Plasma Enhanced Chemical Vapor Deposition (DLN) film produced in a manner substantially similar to applicant's disclosed coating and therefore would be expected by one of ordinary skill to have substantially similar composition. Further regarding claim 17, with regards to the claimed compositional percentages, in the alternative, it would be obvious to optimize the claimed percentages of components to within applicant's broadly disclosed range by optimizing the hardness and wear resistance of the coating, taking advantage of the

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DLN films ability to be tailored to have specific properties (as taught by Yang above).

No patentable distinction is seen.

### ***Response to Arguments***

10. Applicant's arguments with respect to claims 1 and 4-17 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL MILLER whose telephone number is (571)272-1534. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Keith Hendricks can be reached on (571)272-1401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Daniel Miller

/KEITH D. HENDRICKS/  
Supervisory Patent Examiner, Art Unit 1794